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Lab09

1) Identify and document all functional dependencies:

TABLE: Engineers

PK Eid

Eid -> first name, last name, highest academic degree earned, age, favorite video game.

TABLE: SpaceEng

PK (Sid, Eid)  
FK(Sid, Eid)

TABLE: Astronauts

PK Aid

Aid -> first name, last name, years flying, age, golf handicap, spouse.

TABLE: SpaceAst

PK(Aid, Sid)

FK(Aid, Sid)

TABLE: Flight Control Operator

PK Fid

Fid -> first name, last name, chair preference, age, preferred drink, recommended hangover cure.

TABLE Spacecraft

PK Sid

Sid-> name, tail number, weight in tons, fuel type, crew capacity.

TABLE SpaceEng

PK (Sid, Eid)

FK (Sid, Eid)

TABLE Crews

PK Cid

FK Sid

Cid->Sid

Table CrewMembers

PK (Cid, Aid)

FK(Cid, Aid)

TABLE Systems

PK (SYid)

(SYid) -> name, description, costUSD

TABLE SystemsOnShip

PK(SYid, Sid)

FK(SYid, Sid)

TABLE Parts

PK Pid

Pid -> name, description, costUSD

TABLE SysParts

PK (SYid, Pid)

FK(SYid, Pid)

TABLE Suppliers

PK SUid

SUid -> name, address, payment terms

\*Note that there can be two suppliers with the same name, so the table still holds 2nf. For example there could be two separate CordaroSupply Co, but at different locations.

TABLE Catalog

PK (SUid, Pid)

3)

This database is in first normal form because all intersections of a row and column result in atomic data. Furthermore, the database exists in second normal form because there are no partial dependencies. Meaning that in all tables, there are no columns that depend on any other column besides the primary key itself. Additionally, the database is in third normal form because there are no transitive functional dependencies. Meaning that nowhere in the tables is A functionally dependent on B, and B is functionally dependent on C.